



The 3rd International Conference on Negative CO₂ Emissions

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From 18 to 21 June 2024, the "3rd International Conference on Negative CO₂ Emissions" took place at the Mathematical Institute at the University of Oxford, UK, hosted by CO₂RE. Tim Dixon and I both attended the conference.

One day ahead of the conference, I also attended a workshop on establishing a "Translational Carbon Dioxide Removal (CDR) Centre" hosted by Heriot-Watt University, University of Calgary, University of Pennsylvania, University of Oxford, Lawrence Livermore National Laboratory and RMI. The aim of this workshop was to give input on the development of CDR-specific education for a growing new sector, including both the new workforce and the reorientation of experienced workers from other sectors. The main insights from the workshop will be published soon in a comment in the new journal "Nature Reviews Clean Technology".

The conference started the next morning with about 360 in-person and 150 online participants and a plenary, during which Steve Smith (University of Oxford) highlighted the key findings of "The State of CDR - 2nd Edition" report, which was published earlier in June. The 2nd Edition continues the assessment of CDR development, expanding geographical coverage and including new topics such as voluntary markets (VMs) and monitoring, reporting and verification (MRV). It identified a subset of scenarios that can be considered "more sustainable", with a central range of CDR deployment of 7 to 9 GtCO₂

per year in 2050. Around 2 GtCO₂ per year of CDR is taking place already, which mostly comes from conventional CDR methods, whereas novel CDR methods contribute less than 0.1% of total CDR, but they are growing more rapidly than conventional methods. CDR innovation activity is generally intensifying, although with some recent slowdowns. There is evidence of diversification across CDR methods, however, current deployment and national proposals for future implementation are more concentrated on a few conventional methods. In addition, many modelled mitigation scenarios still represent only a limited set of CDR methods. There continues to be a gap between the amount of CDR in scenarios that meet the Paris temperature goal and the amount of CDR in national proposals. This CDR gap can be closed by rapidly reducing emissions, scaling up a portfolio of both conventional and novel CDR methods, and explicitly integrating sustainability considerations into CDR policy.

There were 6 more plenary sessions with keynote speakers and panel debates during the week on diverse topics, such as CDR national policy making, the relationship between businesses and research, CDR vs emissions reductions, systematic reviews and MRV. I would like to highlight the MRV panel chaired by Jo House (University of Bristol), during which Paul Zakkour (Carbon Counts) presented findings from the soon-to-be-published (estimated mid-September 2024) IEAGHG report on “MRV for CDR”. The aim of this study was to provide a synthesised technical assessment of CDR methods and evaluate their “MRV-ability” by reviewing their MRV and GHG accounting aspects. The technical review highlighted that questions remain over the foundational science and social acceptance of most CDR methods and thus a portfolio of methods will likely be needed to meet the Paris Agreement. Further findings included that recent focus has been on developing project-based methodologies, which are inherently consequential and rely on baseline scenarios and counterfactuals that are difficult to establish. In addition, the issue of additionality in credit schemes has received widespread criticism. Ultimately, two issues for current approaches to CDR crediting/certification exist: policy utility/inventory visibility and long-term responsibility. The session was complemented by a presentation of David Ho ([C]Worthy) offering insights into the challenges of developing MRV methods for ocean carbon sequestration in particular. The end of the session also saw the launch of the “Mission Innovation SMART-CDR Student Competition”, which aims to promote advancement of MRV technologies by teams of university students. The winners will be able to present their work at the CLIMIT Summit in Norway in February 2025.

Apart from the plenaries, the conference had breakout sessions with 120 presentations and 60 posters on a breadth of CDR topics, as well as a Climate Innovators Business Showcase and several social fringe events for outreach and connecting scientists and engineers with artists, activists, and the public such as “Goodbye Greenhouse Gas!”, which included documentary screenings, interactive exhibits, live art, workshops and hosted the “Visions for Greenhouse Gas Removal” image competition. It is also worth mentioning that the organisers of the conference decided to make all catering vegetarian/vegan to reduce the GHG footprint of the conference.

The final closing plenary session moderated by Steve Smith (University of Oxford) included the award ceremony for the above-mentioned image competition and as a surprise also a virtual presentation of the “Legion 44” trailer by esteemed director Leila Connors. The film will follow individual figures and companies and their innovative CDR technologies to raise wider awareness of the topic and will be the third in a trilogy that includes the well-known “The 11th Hour” and “Ice on Fire”.

The “4th International Conference on Negative CO₂ Emissions” will take place in 2026 in Laxenburg, near Vienna (Austria), and will be hosted by IIASA (International Institute for Applied Systems Analysis).

IEAGHG have had a seat on the Scientific Steering Committee ever since the first edition of the conference series and are happy to continue this for the 4th edition.

References:

State of CDR report: <https://www.stateofcdr.org/>

Conference website: <https://www.negativeco2emissions2024.com/>

SMART-CDR: <https://www.herox.com/SMARTCDR>

CLIMIT Summit: <https://climit.no/en/climit-summit-2025/>

Vision for Greenhouse Gas Removal: <https://co2re.org/community/visions-for-ggr-2/>

Legion 44: <https://www.legion44.world/>

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